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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/598,349

08/07/2007

Gianbattista Fischetti

071308.0751

2919

31625 7590 04/15/2009
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EXAMINER

JONAITIS, JUSTIN M

ART UNIT

PAPER NUMBER

3752

MAIL DATE

DELIVERY MODE

04/15/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,349	Applicant(s) FISCHETTI ET AL.	
	Examiner JUSTIN JONAITIS	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08/24/2006 is/are: a) ☒ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/14/2007</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the double-tubed wall of claims 3, 4, 9, 10, 11, 13, & 14, and the injector which when actuated is in a closed mode of claims 7 and 17 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Reference number (2331) is not found in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 5 and 15 are objected to because of the following informalities: Claims currently state, "wherein the fuel is lead around the actuator unit the injection nozzle." Examiner assumes it should be --wherein the fuel is lead around the actuator unit towards the injection nozzle--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 and 15 recites the limitation "Fuel is lead around the actuator unit the injection nozzle" in the second and third lines. There is insufficient antecedent basis for this limitation in the claim. Specifically, the structural limitations disclosed in claims 5 and 15 do not expand the claimed limitations of claims 1 and 12 to which claims 5 and 15 depend on respectively in a manner that discloses structure where the fuel is lead around the actuator unit.

Claims 9-11 recites the limitation "A method according to claim..." in the first line of each of the claims. There is insufficient antecedent basis for this limitation in the claim. Specifically, claims 9 and 11 are dependant on claim 3, and claim 10 is dependant on claim 4, however neither claim 3 or 4 are method claims.

Claims 7 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. Examiner does not understand how the device with the limitations of claim 1 can function in a closed mode when actuated when a piezo actuator or a solenoid are used for the actuator unit as described on page 4 paragraph 1 of applicants specification. Further Page 6 Paragraph 5 discloses that the explained embodiments are for a fluid injector that is normally closed and states on page 76 that it could be an inward opening, but doesn't explain how this would be accomplished.

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Because of the above issues with claims 7 and 17, the examiner has not further examined claims 7 and 17 based on their merits.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6, & 12-16 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S.

PG-Pub 2001/0007338 to Popp.

In re claim 1, Popp discloses a fluid injector comprising:

A housing (Body Tube (36)), a valve body (valve body(48)) and an actuator unit (actuator body (50)) that is inserted in the housing;

The valve body comprising a **cartridge (walls of valve body (48))** with a recess that takes in a **needle (valve (46))**, a **receptance which is formed on the needle (See Popp figure 3 for portion of valve (46) that is recessed)** and fixes a **locking element (keepers (78))** in an axial direction relative to the needle and a **spring rest body (Spring retainer (76))** which has a recess through which the needle protrudes and which takes in the locking element and fixes it in the radial direction relative to the needle, and a **return spring (Spring (66))** which rests on the spring rest body and is pretensioned in a way that it presses the spring rest body against the locking element.

In re claim 2, Popp discloses the invention as described above including the locking element is conically shaped on the surface facing the spring rest body and the recess of the spring rest body is correspondingly conically shaped.

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In re claim 12, Popp discloses a fluid injector comprising a **housing (body tube (36))**, a **valve body (valve body (48))** and an **actuator unit (actuator body (50))** inserted in the housing, wherein the valve body comprises a **cartridge (walls of valve body (48))** with a recess that takes in a **needle (valve (46))**, a receptance which is formed on the needle **(See Popp figure 3 for portion of valve (46) that is recessed)** and fixes a **locking element (keepers (78))** in axial direction relative to the needle, and a **spring rest body (spring retainer (76))** which has a recess, through which the needle protrudes and which takes in the locking element and fixes it in a radial direction relative to the needle, and a **return spring (spring (66))** which rests on the spring rest body which is pretensioned in a way that presses the spring rest body against the locking element, where the locking element is conically shaped on the surface facing the spring rest body and the recess of the spring rest body is correspondingly conically shaped.

In re claims 3, 4, 13, and 14, as best understood by the examiner, Popp discloses the invention as described above including the housing comprising a double-tubed wall (defined by Body Tube (36) having an interior space (gas passageway (41)) before reaching the tube formed by the actuator body and valve body), which further has a fuel connector (port at the top of the injector) where the fuel is lead through the double-tubed wall towards the injection nozzle.

In re claims 5 and 15, Popp discloses the invention as described above including the injector having a fuel connector where the fuel is lead around the actuator unit to the injection nozzle.

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In re claims 6 and 16, Popp discloses the invention as described above including the fluid injector is turned into an open mode when actuated.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. PG-Pub 2001/0007338 to Popp.

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In re claims 8-11, Popp discloses the fluid injector including applicants claimed structural limitations as previously described but fails to disclose the method of assembling a fluid injector as described by the applicant.

However it would have been obvious to one having ordinary skill in the art at the time the invention was made to assemble the injector as described by the applicant because:

- Inserting a needle into a recess of a cartridge of a valve body is essential to the function of the injector
- Bringing a return spring into contact with a second spring rest, which is formed in the cartridge because the spring is a necessary component that must be in contact with a stationary surface in order to move the needle.
- Moving a spring rest body onto the needle until it is in a position which is closer towards the second spring rest than a than the receptance of the needle, because it's easier to attach the locking element into the receptance of the needle with the second spring rest out of the way pushing down on the spring.
- Allowing the spring rest body to move back until it contacts the locking element in the area of it's recess and in a way that takes in the locking element in the recess of the spring rest body, is essential for the function of the device and is designed in a manner (conical wedge shape) allowing this form of assembly.
- The step of inserting the valve body into a housing has to have been done in order to create the apparatus disclosed by Popp

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- The step adjusting a pretension of the return spring is essential in order to make the apparatus disclosed by Popp Function
- The step of inserting the locking element into the receptance of the needle is performed from a radial direction relative to the needle also could not have been omitted because the receptance is extruded radially from the needle.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. WO 03/016707 to Fischer discloses a fluid injector with similar structure. U.S. Patent #6,776,354 to Cooke discloses a fuel injector with similar structure. U.S. Patent #6,561,436 to Boecking discloses a fuel injection valve having similar structures. U.G-Pub 2008/0257990 to Matteucci et al. discloses a similar fluid injector and a method of manufacturing. U.S. PG-Pub 2003/0111563 to Tsuchiya et al. discloses a fuel injection valve with similar components. U.S. PG-Pub 2001/0032893 to Lambert discloses a fuel injector with similar structures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN JONAITIS whose telephone number is (571)270-5150. The examiner can normally be reached on Monday - Thurs 6:30am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUSTIN JONAITIS/
Examiner, Art Unit 3752
/Len Tran/
Supervisory Patent Examiner, Art Unit 3752